The macroeconomics of shadow banking

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The Macroeconomics of Shadow Banking

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Abstract

In this paper, we propose a simple short-run post-Keynesian model in which the key aspects of shadow banking, namely securitization and the production of structured finance instruments, are explicitly formalized. At the best of our knowledge, this is the first attempt to broaden purely real-side post-Keynesian models and their traditional focus on shareholder-value orientation, the financialization of non-financial firms, and the profit-led vs wage-led dichotomy. We rather put emphasis on the role of financial institutions and rentier-friendly environment in determining the predominance of specific growth and distribution regimes. First, we illustrate the macroeconomic rationale of shadow banking practices. We show how, before the 2007-8 crisis, securitization and shadow banking allowed for an increase in profitability for the whole financial sector, while apparently keeping leverage under control. Second, we define a variety of shadow-banking-led regimes in terms of economic activity, productive capital accumulation, and income distribution. We show that both an 'exhilarationist' and a 'stagnationist' regime may prevail, nevertheless characterized by a probable increase in income inequality between rentiers and wage earners

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1. Introduction

The outbreak of the sub-prime mortgage crisis has brought to the forefront the role of the so-called shadow banking system as major responsible for the 2007-2008 financial meltdown. Paul McCulley, former managing director at PIMCO investment fund, is generally considered as the father of the expression 'shadow banks'. With this term, he referred to those financial intermediaries funding their banking activity with uninsured commercial paper and without the backstop of the FED (McCulley, 2007, p.2). However, such definition, together with its implicit distinction between traditional regulated banks on the one hand and new, unregulated (i.e. shadow) financial institutions on the other, is controversial. Fein (2013) notes that shadow bank "exists as an integral part of the regulated banking system (Fein, 2013, p.2)". Most of the practices and actors usually considered as shadow banking (see more on this below) actually originate, are performed, or are at least indirectly related to traditional regulated financial operators.

An intensive debate on the implications of shadow banking in terms of banking theory and monetary economics theory has sparked among economists. Following Adrian and Shin (2010), the first strand of literature provides a prevalently microeconomic perspective on 'the changing nature of financial intermediation' as due to the development of shadow banking. It describes in details the functioning of shadow banking actors, their complex nest of relations, and main characteristics of the corresponding financial instruments (Coval *et al.*, 2009; Gorton and Metrick, 2010 and 2012; Cetorelli *et al.*, 2012). However, it pays relatively scarce attention to the consequences of the development of shadow banking on macroeconomic variables such as economic growth, income distribution, as well as on the overall macroeconomic stability and systemic resilience to financial shocks.

The second strand of the literature – i.e. monetary economics – albeit partially overlapping with the banking approach, shows much more concern for the macroeconomic aspects of the story. Several studies have gained momentum in the immediate aftermath of the 2007-8 financial crisis by interpreting shadow banking development, and the financial crisis itself, through the lens of the Minskyan financial instability hypothesis (Tymoigne, 2009; Nersisyan and Wray, 2010; Dymski, 2010). From a methodological point of view, most of these contributions rely upon argumentative analyses. They do not frame shadow banking in a formal model and do not try to assess analytically its economy-wide implications.

At the best of our knowledge, only a few studies have tried to model the intrinsic fragility of contemporary financial systems (Eatwell *et. al,* 2008; Nikolaidi, 2015; Bhaduri *et al.*, 2015). Nikolaidi (2015), for instance, models securitization in a stock-flow-consistent model in order to assess the heightened macroeconomic fragility that may arise out of financial sector-induced increases in households' leverage. Eatwell *et al.* (2008) focus on the pro-cyclical and destabilizing dynamics of investment banks' leverage emerging out of securitization practices. Finally, Bhaduri et al. (2015) describe systemic fragility as due to securitization-fuelled boom-and-boost cycles in financial assets' prices.

Although extremely interesting, most of these studies still focus on a single specific aspect of the shadow banking system only. Nikolaidi (2015) and Bhaduri *et al.* (2015), for instance, do not bring into the picture the leading role of repos in fuelling the expansion of shadow banking practices. Eatwell *et al.* (2008) offer an oversimplified representation of repos, restrictively identified as a monetary policy tool. They neglect an explicit treatment of repos as financial relations connecting the different actors involved in the process of securitization and in the creation of structured finance products. More in general, all these contributions do not match their macroeconomic analysis with a clear investigation of the rationale and the purposes of shadow banking-related practices.

In this article, we try to combine some aspects of the abovementioned contributions on shadow banking with the post-Keynesian literature on finance-dominated capitalism. This literature mainly consists of new-Kaleckian or Harrodian models aiming to study the real-side effects of the financialization of *non-financial* firms (henceforth NFF). Accordingly, it identifies and perhaps reduces financialization to the so-called shareholder value orientation, i.e. the increased concern by NFF management for *shareholders'* interests as opposed to *stakeholders'* interests (Stockhammer, 2004; Skott and Ryoo, 2008; Hein, 2010; Onaran *et al.* 2011). On the one hand, this change in NFF corporate governance is portrayed as the responsible (among other factors) for the reduction in workers' bargaining power and in the corresponding wage share on national income.[i] On the other hand, NFF financialization has also induced NFF to more extensively deploy retained earnings to distribute dividends to shareholders, to pay generous stock option-related compensations to top managers, and to finance financial investments, rather than productive investments and innovation efforts (Mazzucato 2013; Botta, 2016). Both phenomena are eventually considered as conducive to economic stagnation and rising income inequality, in particular in the context of wage-led economies (see Onaran and Obst, 2016).

The existing post-Keynesian literature on financialization, although extremely relevant, does not take into account a salient aspect of financialization itself, perhaps the most prominent, i.e. the development of shadow banking and shadow banking-related practices. Indeed, by relying on pure 'real-side' models that neglect, by definition, any 'active' financial sector, they cannot capture the intrinsic evolution of the financial sector as such, as well as the ensuing effects on the real side of the economy. This work aims at addressing this shortcoming and filling the gap through a simple analytical model in which shadow banking institutions and practices are explicitly considered.

The goal of this paper is twofold. First, differently from Eatwell *et al.* (2008), Nikolaidi (2015) and Bhaduri *et al.* (2015), we try to disclose and formalise the rationale of shadow banking (the securitization of existing assets and the issuance of structured finance products) from a macroeconomic perspective. We focus on the behaviour of entire financial compartments, and eventually on the financial system as a whole, rather than on single operators. We show how shadow-banking activities have been designed and implemented in order to increase the profitability of financial institutions – in particular commercial banks - and, at the same time, apparently and artificially maintain their leverage under control. Second, we try to assess the impacts that shadow banking practices exert on the whole economy. In so doing, we move the post-Keynesian perspective on finance-dominated capitalism away from its (almost exclusive) focus on the macroeconomics of finance-led changes in NFF governance. Even further, we extend the macroeconomic analysis recently provided by Bhaduri *et al.* (2015), and we show how shadow-banking ballooning may affect a variety of macroeconomic variables such as economic activity, real sector investments, and income distribution.[ii] An interesting finding (also marking a discontinuity with respect to the previous literature) is that rising income inequality in financialized economies may be due to the increasing imbalance between income (wages) generated in the real sector and income (rents) emerging from financial assets originated by shadow banking financial engineering, rather than from the traditional distributional conflict between workers and capitalists.

In section 2, we briefly describe how our economy works, and how the financial and the real sectors are intertwined. We adopt the national accounting perspective as developed by the post-Keynesian stock-flow consistent approach (Godley and Lavoie 2007, Caverzasi and Godin, 2014), thus displaying financial-real relations and their implications in standard balance sheet and transaction matrices. Section 3 deals with the effects that securitization and the development of structured finance instruments can have

on the profitability and leverage of both commercial banks (henceforth CBs) and financial firms (henceforth FFs). Section 4 moves the attention to the real side of the economy. We present a simple short-run post-Keynesian model to show the effects of shadow-banking practices on economic activity, productive investments, and income distribution. Section 5 concludes.

2. A simple closed economy model with shadow banking

There is no doubt that the remarkable expansion of the financial sector with respect to the real side of the economy represents a salient aspect of the evolution of developed capitalist economies in the last three decades. This long-term process involved a deep change in the structure of the financial system, as well as in its relation with the real side of the economy. New financial instruments, as well as new financial institutions emerged (see Botta *et al.*, 2015, pp.200-1).

The core of the so-called shadow banking is the process of securitization: "securitized banking is the business of packaging and reselling loans, with repo agreements as the main source of funds" (Gorton and Metrick 2012, p.425). This financial activity involves different kinds of financial institutions. Various layers of intermediation and several financial assets transformations take place within the financial system (see Pozsar *et al.*, 2013). Through securitization, different types of credit (e.g. student loans, consumer loans, mortgages etc.) are transformed into a multitude of financial instruments. These types of credit are first sold to other financial institutions (e.g. issuers of asset-backed securities, investment banks, brokers and dealers) and then transformed into increasingly complex structured financial instruments (MBS, ABS, CDO, CDO^2 etc.). The two key financial instruments in this process are structured finance - CDOs in our model - and repos. In the end, financial relationships are commodified (Lysandrou, 2005) and used to 'produce' complex financial instruments, which are sold to the savers in different forms, through the intermediation of diverse financial institutions (e.g. Money Market Mutual Funds, pension funds, insurance companies).

Figure 1 below captures some of the preeminent aspects of shadow banking, and the main elements of the rise of securitization activities. It shows the values of: (i) securitised real estate loans, held as assets by the financial sector; (ii) mortgages issued by CB; (iii) repos, displayed as an asset of CBs. MBS and repos exhibit a skyrocketing rise from mid-1990s, and a sharp fall after the 2007-2008 crisis. The dynamic of mortgages appears relatively smoother. However, it is important to bear in mind that the nominal

value of this type of stock is significantly higher than the others two are. Two considerations are of particular interest. First, the steep rise of MBS anticipated and somehow drove the rise in repos and mortgages. MBS started growing in 1996, exactly when the Fed reinterpreted the Glass-Steagall "allowing bank holding companies to earn up to 25 percent of their revenues in investment banking (Sherman 2009, p.2)". Second, the fall in the stock of securitised mortgages started in the third quarter of 2006. Therefore, it not only anticipated the dynamic of the other two series, but it also started *one year before* what is commonly acknowledged as the starting date of the crisis (August 2007). This last point is extremely relevant to understand how FFs' financial solidity dramatically worsened in the run up to the crisis (see more on this below).

[FIGURE 1]

In this section of the paper, we provide a simplified representation of the abovementioned key aspects of shadow banking and of the way they affect the financial and the real side of the economy, as well as their interconnections. We assume a closed private economy without government. We pay specific attention to the financial sphere, here subdivided in CBs and FFs. These two sectors interact via the securitization of CBs' assets (bought by FFs) and via the provision of repo loans financing the purchases of securitized assets.

Table 1 shows the Balance Sheet of the economy.

[TABLE 1]

Our economy comprises six sectors, namely workers, rentiers, NFF, CBs, and FF (i.e. investment banks, broker and dealers, and hedge funds), and the Central Bank. We take in to account nine different assets. CBs hold two sets of assets. On the one hand, (J_{CB}) denotes sector's own funds as initially provided by CBs' shareholders when subscribing equities. We assume CBs to hold their own funds (or *Tier 1* capital) as reserves in form of cash. On the other hand, there are assets used by the traditional banking system to provide different forms of credit to the other sectors of the economy: loans (L) to NFF, repos (RP) to FF, and mortgages (M) to working households. CBs move out a portion (z) of mortgages from their balance sheet, selling this fraction to FF. This operation is usually implemented

through Special Purpose Vehicles, which, for sake of clarity, we decided not to include in our model.

CBs have two kinds of liabilities: workers' deposits (D) and equities (E_{CB}). The former is held by working households and does not pay interests, while rentiers hold the latter. Equities can here be conceived as the counterpart of CBs' own funds. For the sake of simplicity, they are assumed to remain constant. This also applies to FF, whose equities (E_{FF}) are again held by the rentiers. FFs rely on two types of liabilities to finance their activities: collateralized debt obligation (CDO) sold to rentiers (CDO_R) and to NFF (CDO_{NFF}), and repos (RP), used to collect funds from CBs. Next to cash (J_{FF}), FFs hold the fraction of mortgages (zM) purchased from CBs.

Reverting to the real side of the economy, we consider two classes of households. Workers hold their wealth in form of deposits (D) and houses ($p_H H$). Their stock of debt is represented by mortgages (M). Rentiers do not accumulate debt and hold their wealth in form of financial assets: Collateralized Debt Obligations (CDO_R) and Equities (E). NFF are indebted toward CBs (L) and own both real and financial assets, respectively K (the nominal value of real capital) and collateralized debt obligations (CDO_{NFF}).

[TABLE 2]

Table 2 shows the so-called full integration matrix, thus including net financial flows among the different sectors (*transaction flow matrix* above the first dotted line) and the update of the stock (*revaluation matrix* between the second and third dotted line).

Workers receive income in the form of wages (W) by NFF and have two outflows: they buy consumption goods from NFF and pay interests on their outstanding stock of mortgages (i_M*M). The flow associated with interest payments on mortgages will split between CBs and FFs according to the share (z) of mortgages owned by the latter. Rentiers will receive dividends (DIV) from CBs (DIV_{CB}) and FFs (DIV_{FF}), as well as interest on CDOs (i.e. $r*CDO_R$), on which they also pay a fee (CDO_R).[iii] More in detail, the interest rate (r) stands for the fixed *coupon* interest rate originally defined in CDO contracts, rather than the effective interest rate that eventually emerges from market transactions, and connected (in a negative way) to CDOs prices.[iv] NFF pay wages (W) and sell consumption goods (C), and investment goods (I). Their financial earnings are the interests received on the share of CDO they hold ($r*CDO_{NFF}$), while their financial outflow is made by the fee they pay to FFs ($f*CDO_{NFF}$) and the interest on loans paid to CBs (i_L*L).

We assume CBs to distribute to rentiers, in the form of dividends (DIV_{CB}), all the earnings they make out of the interest received on their assets. This applies also to FFs, whose inflows are the interests received on the share of mortgages owned (zM) and on the fees on the *CDO* issued ($f^{*}CDO$). We assume NFF not to distribute dividends. Their inclusion would simply make our understanding of shadow-banking-related real-side consequences of financialization harder to catch. In addition, this also allow us to emphasize the novelty of the venue of analysis we are exploring with respect to previous post-Keynesian contributions, based on the concept of shareholder value orientation. Nonetheless, we still preserve the other relevant aspect of NFF financialization. NFF can deploy retained earnings to accumulate financial assets (CDO_{NFF}) rather than investing in the real economy.

In this paper, we take into account multiple financial assets, each of them associated to a specific interest rate. Given our aim, we do not discuss how each specific interest rate is determined (e.g. by applying a mark-up rate on the 'cost of liquidity' as influenced by central bank monetary policy). Rather, we are interested in the structure of the whole set of interest rates. In this context, suffice to say that the levels of the interest rates generally depends on the relative perceived risk of the underlying assets, which in turn depends upon their maturity, their level of collateralization, and their degree of 'shiftability' (see Mehrling, 2011). Accordingly, we may safely assume the following interest rate structure to prevail, at least in 'normal times': $i_M \geq i_L > r > i_{RP}$.

The revaluation matrix is straightforward, as it shows the change in the level of the same stocks described within the explanation of the aggregate balance sheet. Nonetheless, some elements are worth noting. First, following Adrian and Shin (2010), FFs finance their holding of new mortgages either through repo from CB[v] or by selling new *CDO* contracts to rentiers and to NFF[vi]. They rely on these two different types of borrowings for two reasons. On the one hand, the issuance of apparently riskless long-term obligations (i.e. CDOs) requires overcollateralization (the value of purchased underlying securitised assets must be higher than the value of issued collateralized obligations). Accordingly, FFs can only partially finance assets purchases through CDOs issuances, the remaining part being financed by recollecting funds on repos markets. On the other hand, repos markets stretch short-term cheap funds, however prone to dry up quickly. Accordingly, FFs will try to largely rely upon long-term CDOs-linked borrowing. Even though relatively more expensive than repos, CDOs-linked borrowing represents a more stable source of finance than the latter. Second, NFF can use their profits, as well as the new inflow of loans, to

finance the purchase of real or financial capital. Finally, we assume house purchases to give rise to purely intra-sectorial exchanges among households. For the sake of simplicity, we do not consider the construction of new houses (more on this below). Accordingly, the price of existing dwellings adjusts to balance the supply and demand for houses, the latter being fed by new mortgages. New mortgages conceded to the workers' households will eventually show up in price changes of the existing dwellings.

In this paper, we focus on the 'financialization-determined' short-run dynamics of the economy, rather than on its long-run macroeconomic stability. Our main interest is to analyse how shadow-banking-related current flows, as emerging from accumulated financial positions and past financialization processes, influence current economic activity and income distribution. In this regard, financialization has first allowed a wider range of households to benefit from an increasing amount of (then securitised) mortgages. This, in turn, has stimulated economic activity also by feeding the construction of new dwellings. Without neglecting the importance of this channel, here we do not explicitly consider it. As far as the impacts on the GDP are concerned, we rather focus on the positive effect financialization may have induced on aggregate consumption and economic activity mainly by leading to higher prices of existing dwellings, thus raising households' wealth through time. Accordingly, we keep the amounts of houses (H) constant. We apply the same logic to equities (E), which in this model simply represent shareholders' initial contributions to the constitution of financial corporations.

3. Financial sector's leverage and profitability under securitization.

The existing literature on shadow banking has devoted hardly any words on the macroeconomic rationale of securitization and the issuance of structured finance products. In this section, we try to formally demonstrate the key effects of securitization, as well as of the creation of structured finance products, on the profitability and leverage of CBs and, more broadly, FF.

3.1 The commercial bank sector

Consistently with the description of shadow banking provided in Table 1 and Table 2, CBs first originate financial assets, i.e. mortgages, and then distribute them throughout the financial system, thanks to the securitization process. At the same time, they provide other financial operators with the required loans, i.e. repos, in order to buy securitised assets. In

this sense, CBs act on both sides of the market for securitised assets (see Botta *et al.*, 2015, p. 212). This process affects CBs' leverage, as stated in equation (1):

$$lev_{CB} = \frac{\gamma_1[(1-z)M + L] + \gamma_2 RP + \gamma_3 J}{E_{CB}} \quad (1)$$

According to standard procedures to compute financial actors' capital adequacy ratios and leverages, financial assets are weighted for their perceived degree of riskiness. In equation (1), γ_n (with n from 1 to 3) stands for the different weights associated to the four assets CBs may hold in their balance sheet. Mortgages to workers, as well as loans to firms, are classified as long-term (relatively) risky assets with respect to repos and cash. Repos usually are short-term collateralized monetary market loans with a perceived low risk, whilst cash is a risk-free asset. Accordingly, we assume ($\gamma_1 > \gamma_2 > \gamma_3$). For the sake of simplicity we set ($\gamma_3 = 0$) and ($\gamma_2 = 1$), so that:

$$lev_{CB} = \frac{\gamma_1[(1-z)M + L] + RP}{E_{CB}} \quad (1.b)$$

Consistently with equation (1.b), the profitability of the overall CBs sector, as measured by returns on equity (*ROE*), is:

$$ROE_{CB} = \frac{i_M(1-z)M + i_L L + i_{RP} RP}{E_{CB}} \quad (2)$$

Through the repo system, CBs provide financial corporations with the required means of payments to buy a part of securitised mortgages. The remaining portion is financed by the issuance of structured finance products, namely *CDO*. If we assume that total *CDO* issuance represents a portion ϑ of the value of total securitised mortgages, we get:

$$CDO = \vartheta z M \; with \quad 0 < \vartheta < 1 \quad (3)$$

$$RP = (1-\vartheta) z M \quad (4)$$

Substituting equations (3) and (4) into (1.b) and (2) respectively, we get:

$$lev_{CB} = \frac{\gamma_1 L + [\gamma_1(1-z) + (1-\vartheta)z]M}{E_{CB}} \quad (5)$$

$$ROE_{CB} = \frac{i_L L + [i_M(1-z) + i_{RP}(1-\vartheta)z]M}{E_{CB}} \quad (6)$$

In order to get the effects of securitization on CBs' leverage and profitability, first compare equation (5) with the corresponding leverage ratio that would emerge, given the total amount of initial mortgages, in the hypothetical absence of securitization (i.e. when $z = 0$). We get:

[TABLE 3]

It is straightforward to verify through simple algebraic passages that the condition for CBs to reduce their leverage and improving their financial solidity under securitization reads:

$$[(1-\vartheta) - \gamma_1]z < 0 \quad (7)$$

Condition (7) holds true since that ($\gamma_1 > 1$). This clearly tells us that, for a given value of credit ($L + M$) provided by CBs to the economic system as a whole, *the securitization process allows commercial banks to decrease their leverage*.

Given this, it is now possible to analyse the extent by which such a securitization-induced reduction in leverage gives additional space to CBs for the aggressive expansion of mortgage issuances. In order to see this, assume that CBs originate different amounts of mortgages, M^{SEC} and M, referring respectively to the scenario with and without securitization, such that their leverage remains constant. Focusing on the numerator of equation (5), the leverage ratio is:

$$\gamma_1 L + [\gamma_1(1-z) + (1-\vartheta)z]M^{SEC} = \gamma_1 L + \gamma_1 M \quad (8)$$

Hence:

$$M^{SEC} = \frac{\gamma_1}{[\gamma_1(1-z)+(1-\vartheta)z]} M \tag{9}$$

From condition (7), we know that $\frac{\gamma_1}{[\gamma_1(1-z)+(1-\vartheta)z]} > 1$ so that $M^{SEC} > M$. *For a given level of leverage, the banking sector involved in securitization is able to issue more mortgages and expand aggressively its business.*

In order to see how this finding affects CBs' profitability, we can look at CBs' ROE with and without securitization (for a given level of leverage). With a given E_{CB}, we can focus on ROE numerator. The condition for CBs to increase profitability under securitization (and the ensuing provision of repo lending to FFs) reads:

$$i_L L + i_M M < i_L L + \frac{[i_M(1-z) + i_{RP}(1-\vartheta)z]\gamma_1}{[\gamma_1(1-z)+(1-\vartheta)z]} M \tag{10}$$

After some trivial mathematical passages, condition (10) boils down to:

$$i_M < i_{RP}\gamma_1 \tag{11}$$

Three points are worth stressing. First, *ceteris paribus,* the higher the degree of riskiness γ_1 of the mortgages created by CB, the more likely securitization and 'originate-and-distribute' practices will raise CBs profitability. Accordingly, CBs will be highly incentivized to embark in securitization, and securitization practices will quickly spread among financial operators. It goes without saying that this scenario may fairly well describe the economic environment emerging in the US at the beginning of the 2000s, with the boom in sub-prime lending. Second, and perhaps more worrisome, banking regulation aimed at restraining the creation of risky assets (say sub-prime mortgages) by attaching higher risk coefficients (γ) to risky assets themselves, may turn counter-productive under securitization. Indeed, it could end out encouraging CBs to undertake securitization even more aggressively, rather than disincentive it. If regulatory monetary institutions aim at bringing back the financial system to a safe position, they have to directly restrain the kind of securitization practices financial operators can adopt.[vii] Finally, securitization is even more likely to increase CBs profitability in a context of relatively high monetary market interest rates. In this context, the higher the interest rate on repos, the higher the revenues (and hence profitability) accruing to CBs thanks to this

specific type of lending. And the securitization process repos aim at fostering and financing will get even more frenetic. Interestingly, this was the 'rentier-friendly' scenario prevailing in most developed economies before the outbreak of the crisis.

3.2 The financial firm sector

In our model, the FFs sector is the counterpart of CBs in the securitization process. It buys assets thanks to resources collected by issuing structured finance products (*CDO*) and by entering repo agreements with CBs. In order to compute FFs sector's financial leverage, it is thus relevant to move attention on its liability side. In this sense, we follow Perotti and Suarez (2009) and take explicitly into account the different degrees of maturity of FFs' liabilities to assess the overall sector financial solidity. In particular, let assume that a coefficient $\lambda_1 > 1$ is attached to *short-term* repo financing, whilst *long-term CDO*s are considered as relatively safer liabilities. Accordingly, equation (13) defines FFs' leverage in terms of their liability structure:

$$lev_{FF} = \frac{CDO + \lambda_1 RP}{E_{FF}} \tag{12}$$

Consistently with the balance sheet matrix of our simplified economy, by plugging equations (3) and (4) into (12), we get:

$$lev_{FF} = \frac{\vartheta zM + \lambda_1(1-\vartheta)zM}{E_{FF}} = \frac{[\vartheta + \lambda_1(1-\vartheta)]zM}{E_{FF}} \tag{13}$$

By totally differentiating equation (13) with respect to M and ϑ and setting it equal to zero, one gets:

$$\frac{dM}{M} = \frac{(\lambda_1 - 1)d\vartheta}{[(\vartheta + \lambda_1(1-\vartheta)]} \tag{14}$$

Equation (14) simply tells that FFs can buy an increasing amount of mortgages from CBs $\left(\frac{dM}{M} > 0\right)$ while safely maintaining their leverage ratio unchanged ($dlev_{FF} = 0$), just by increasing the share of their purchases which are financed through long-term CDOs issuances ($d\vartheta > 0$). FFs were indeed highly interested in getting triple-A evaluations for

their structured finance products. Following Coval *et al.* (2009), this helped FFs to artificially stimulate the demand for *CDO* by final investors, make new *CDO* issuances easier, and eventually expand their balance sheet in an allegedly safe way. In line with Figure 1, equation (14) also helps to understand the significant deterioration of FFs financial position emerging since the third quarter 2006 on. Indeed, whilst the rising concerns about standard *CDO* riskiness was drying up the corresponding demand by final investors, FFs had had to increasingly finance additional (securitized) assets purchases by issuing more 'exotic' products, i.e. synthetic *CDO* (also CDO^2), as well as short-term repo borrowing.

The implications of the above leverage ratio 'manipulation' on FFs' profitability are straightforward, and formalized in equation (15):

$$ROE_{FF} = \frac{[i_M - \vartheta(r - f) - (1 - \vartheta)i_{RP}]zM}{E_{FF}} \tag{15}$$

According to the maturity and degree of riskiness of the different assets and liability implicitly considered in equation (15), and thus of the ensuing structure of interest rates, i.e. $i_M > i_{RP} > r$, the profitability of FFs will increase through the expansion of the pool of securitized mortgages held in their balance sheet. Other way around, equations (14) and (15) together provide a mathematical representation of the well-known statement by Citigroup CEO Chuck Prince: "As long as the music is playing, you've got to get up and dance" (Nakamoto, 2007). Insofar as FFs had the opportunity to easily issue structured finance liabilities and increase their profits without affecting their apparently solid financial exposition, they had to do so.

4. The impact of shadow banking on the real economy.

Consistently with the overall portray of the economy as showed in Tables 1 and 2, we take into account a simple close economy without government. Consumption by workers' and rentiers, as well as desired investments by NFF are the unique demand injections we take into account.

According to matrices in Table 1 and Table 2, equations (16) and (17) respectively define consumption expenditures by workers and rentiers (C_W and C_R). Workers' (rentiers') consumption depends positively on disposable income YD_W (YD_R) and wealth V_W (V_R), according to the corresponding parameters c_1^W (c_1^R) and c_2^W (c_2^R). Workers' disposable

income is given by the difference between the total wage bill (wN) and interests paid on the outstanding amount of mortgages ($i_M M$). Workers' wealth consists of deposits D, and houses $p_H H$.

$$C_W = c_1^W YD_W + c_2^W V_W \tag{16}$$

$$C_R = c_1^R YD_R + c_2^R V_R \tag{17}$$

Rentiers' income depends exclusively on interests on *CDO* and dividends distributed by CBs and FFs:

$$YD_R = (r - f)CDO_R + DIV_{CB} + DIV_{FF} \tag{18}$$

With $DIV_{CB} = i_M(1 - z)M + i_L L + i_{RP} RP;\ DIV_{FF} = i_M zM + (f - r)CDO - i_{RP} RP$

Equation (19) below formalises desired productive investments by NFF:

$$g = \frac{I}{K} = \beta_0 + \beta_1 u - \beta_2 i_L + \beta_3(\pi - r) + \beta_4 r\psi \tag{19}$$

With $\psi = \frac{CDO_{NF}}{pK}$; $\beta_0,\ \beta_1, \beta_2, \beta_3, \beta_4 > 0$

Next to the autonomous component (β_0) several factors influence productive investments. First, desired productive investments depend positively on capacity utilization (u) and negatively on the interest rate on loans from CBs (i_L). Second, in the age of financialization, NFF have increasingly used retained earnings and loans from banks in order to acquire financial assets rather than productive means of productions (Stockhammer 2004, Krippner, 2005). A potential trade-off stands out between financial and productive investments. Equation (19) captures this point by assuming that productive investments depend positively on the *gap* between the profit rate (π) and returns on financial investments (r). The higher is r with respect to π (financial investments are relatively more lucrative) the higher are NFF' incentives to divert resources towards financial investments themselves, thus scaling down productive investments. Finally, recent empirical studies about the impact of financialization on investments also show that financial earnings may sometimes provide additional resources for undertaking productive investments (Orhangazi, 2008; Tori and Onaran,

2015). This is particularly true for relatively small, thus more financially constrained, companies. Accordingly, in equation (22), productive investments may also benefit from increasing financial earnings as a share of productive capital $r\psi$.

Equations (20), (21) and (22) describe the production technology and the supply side of the economy. We assume a constant coefficient production technique. Accordingly, employed labour force *N* is jointly given by the rate of capacity utilization (u), the installed capital stock *K*, and labour productivity *a* (equation 20). NFF set the price of their output by applying a mark-up (μ) on unit labour costs (equation 21). Equation (22) defines the profit share.

$$N = \frac{uK}{a} \tag{20}$$

$$p = (1+\mu)\frac{w}{a} \tag{21}$$

$$\pi = \frac{pY - wN}{pK} = \frac{\mu}{1+\mu}u = \tau u \tag{22}$$

In order to find the equilibrium level of capacity utilization (u^*), the corresponding growth rate of the productive capital stock (g^*), one simply needs to find the demand-driven equilibrium level of output on the goods market. After normalizing consumption expenditures by the value of the capital stock and after assuming that the interest rates on loans and mortgages are equal (i.e. $i_M = i_L = i$), we get:

$$u^* = \frac{[c_1^R - c_1^W]im + c_1^R\varphi + c_2^W\Omega_w + c_2^R\Omega_R + \beta_0 - \beta_2 i + (\psi\beta_4 - \beta_3)r}{[1 - c_1^W(1-\tau) - \beta_3\tau - \beta_1]} \tag{23}$$

With $\Omega_R = \frac{V_R}{pK}$; $\Omega_W = \frac{V_W}{pK}$; $m = \frac{M}{pK}$; $l = \frac{L}{pK}$; $\varphi = \frac{YD_R - iM}{pK} = il + i_{RP}\frac{RP}{pK} + (f-r)\frac{CDO_{NFF}}{pK}$

$$g^* = \beta_0 + (\beta_1 + \beta_3\tau)u^* - \beta_2 i + (\beta_4\psi - \beta_3)r \tag{24}$$

Even further, we also analyse the distributive consequences of shadow banking practices by computing the ratio (σ^*) between labour income and rentiers' income as emerging out of the short-run equilibrium (see equation 25 below). Admittedly, this is an

overly simple measure of income distribution. Yet, it may well reflect the outstanding evidence about rentiers' increasing capacity to 'appropriate' larger parts of domestic income also through complex financial relations. Indeed, there is no doubt that new financial dynamics, and the connected rise in rentier-type income (versus labour income) lie behind the rising inequality registered in developed countries in the last decades (Epstein and Power, 2003; Piketty, 2014).

$$\sigma^* = \frac{YD_R}{wN - im} = \frac{\chi}{(1-\tau)u^* - im} \tag{25}$$

With $\chi = YD_R/pK = \varphi + im$

4.1 Comparative statics 1: the case of a house mortgage boom

Once defined the short-run equilibria of our model, we can analyse how changes in financialization-related variables may affect the real economy, as well as modify the equilibrium itself. Let assume, for instance, that the development of shadow-banking practices led financial institutions to aggressively increase the quantity of mortgages (M) conceded to workers through time. In turn, this has raised workers' wealth (by raising dwellings' price), as well as their corresponding indebtedness. On the one hand, the (ex-post) increase in workers' wealth (Ω_W) may possibly feed more consumption through a kind of 'Bhaduri-type' capital gain channel (Bhaduri, 2011).[viii] On the other hand, higher debt service payments on the shoulders of working households indirectly redistribute income from workers to rentiers (through more generous dividends distributed by CB). While consumption expenditures of the latter might increase, the former might have to reduce consumption due to a lower disposable income. The overall effect of such a long process of financialization on economic activity is unclear, as counter-balancing forces are at work. Indeed, by differentiating equation (26) with respect to m, we get:

$$du^* = \frac{[(c_1^R - c_1^W)i + c_2^w(\partial\Omega_w/\partial m)]}{[1 - c_1^W(1-\tau) - \beta_3\tau - \beta_1]}\,dm \tag{(26)}$$

It is straightforward to see that the numerator of equation (26) can be either positive or negative. The term $(c_1^R - c_1^W)i$ is surely negative and constitutes a financial-led extraction on economic activity since that $c_1^R < c_1^W$. This condition represents the negative effects on aggregate consumption of redistributing income away from workers towards

rentier. Redistribution takes indirectly place through the mediation of FFs' by the creation of new (rentiers') financial assets and, correspondingly, new (workers') liabilities. However, the 'consumption expanding' wealth effect $c_2^w(\partial\Omega_w/\partial m)$ is positive. Economic activity will thus contract (expand) in the event the first distributive factor would outstrip (fall below) the wealth factor. In the first case, paraphrasing Bhaduri and Marglin (1990, p. 38), we deal with a 'shadow-banking-led stagnationist regime'. In the second case, an 'exhilarationist' scenario prevails.

According to equation (24), the expansionary or contractionary effect of a house mortgage boom on economic activity is transmitted to productive capital accumulation through the standard accelerator component. More in details, we have:

$$dg^* = (\beta_1 + \beta_3\tau)(\partial u^*/\partial m)dm \tag{27}$$

As far as income distribution is concerned, a reduction or an increase in the ratio between rentiers' and workers' income will highly depend on within which of the two regimes (expansionary or contractionary) the shadow-banking-led house mortgage boom takes place. Totally differentiating equation (25) with respect to 'm', one gets:

$$d\sigma^* = \frac{i[(1-\tau)u^* - im] - \chi[(1-\tau)\,\partial u^*/\partial m - i]}{[(1-\tau)u^* - im]^2}dm$$

After some re-arrangements, we can verify that a house mortgage boom could hypothetically squeeze income inequality, i.e. ($d\sigma^*/dm < 0$) should condition (28) be fulfilled:

$$\varepsilon_{u,m} > \eta^*\frac{(1+\sigma^*)}{\sigma^*} \tag{28}$$

Where $\varepsilon_{u,m}$ is the elasticity of economic activity to an increase in the number of mortgages created by CB, while η^* is workers' debt service-to-income ratio. Referring to the above set of equations, it is straightforward to see that, should economic activity react negatively to an expanding mortgage market ($\varepsilon_{u,m} < 0$), condition (28) will never be satisfied. Financialization-led economic slowdown or recessions will go hand in hand with worsening income distributions. Having said this, even in the contest of a financialization-

led economic expansion, it is far from sure that a more equalitarian income distribution would emerge. Economic activity might react positively to expanding mortgage lending, but still not enough to meet condition (28). Interestingly, the higher the workers' debt service burden, the greater the right-hand-side of condition (28), and the more likely this condition will be above 1. In this context, in order to improve income distribution during financialization-driven economic expansions, economic activity should over-react by far to mortgage increases. It goes without saying that it is hard to imagine that such a scenario will ever take place. Indeed, our analysis seems to suggest that financialization-led expansions will be characterized by persistently worsening income distributions.

4.2 Comparative statics 2: Living in a world where rentiers are well alive

There is a mounting debate among economists and policy-makers about the effects of the current unusually low level of interest rates on economic activity. Critics (see Bindseil *et al.* 2015) stress that low interest rates, as induced by unconventional monetary policies, jeopardize savers. Accordingly, they call for a quick return to normality so that savings could be remunerated properly, and investment stimulated from the supply side of the credit market. In order to assess if this orthodox claim finds any ground, it is interesting to see what happens in our model if we assume a generalized increase in the interest rates on financial activities, and thus higher remunerations for rentiers and NFF on their respective financial asset holdings. This exercise could somehow represent the economic scenario prevailing in the last years preceding the outbreak of the 2007-2008 crisis, when rentiers were 'well alive and in a good shape'.

For the sake of simplicity, we assume that interest rates on financial assets increase all by the same amount, so that $di = di_{RP} = dr$. In addition, we set $\rho = \frac{CDO_{NFF}}{CDO}$, which identifies the share of CDO held by NFF with respect to the total amount of CDO issued. The total amount of financial assets as a share of the capital stock held (directly or indirectly through the financial markets) by rentiers is $\xi = [(l + m) + (1 - \theta)zm - (1 - \rho)\theta zm]$.

Equations (29) and (30) define the effect of such 'rentier-friendly' economic scenario on economic activity and productive capital investments respectively:

$$du^* = \frac{\overbrace{c_1^R}^{+}\overbrace{\xi}^{+}\overbrace{-c_1^W}^{-}\overbrace{m}^{+}\overbrace{-[\beta_2 + (\beta_3 - \beta_4\psi)]}^{?}}{[1 - c_1^W(1 - \tau) - \beta_3\tau - \beta_1]}dr = vdr \qquad (29)$$

$$dg^* = \left[\overbrace{(\beta_1 + \beta_3\tau)\upsilon + [(\beta_4\psi - \beta_3) - \beta_2]}^{?}\right] dr \tag{30}$$

As before, there are no clear-cut conclusions and different regimes could prevail. Hypothetically, a 'rentier-led' regime akin to the 'puzzling' regime described by Hein (2010) could emerge, with both capacity utilization and productive capital accumulation responding positively to increased rentiers' income. However, the economic mechanisms leading to this outcome are different. Indeed, Hein (2010) puts at the centre of his analysis the financialization of NFF, and the redistribution of NFF profits to rentiers in the form of higher dividends as the prime mechanism possibly leading to rentier-led economic expansions. In this paper, redistribution takes place between workers and rentiers via the mediation of an 'active' financial sector, which constantly creates new (financial) investment opportunities for rentiers, along with new liabilities for workers.

More in details, equation (29) implies that the equilibrium level of capacity utilization would expand due to higher interest rates only if increasing rentiers' consumptions would more than compensate for the reduction in workers' one, as well as for the likely contraction in NFF' productive investments. In this sense, equation (30) also tells that productive capital accumulation might hypothetically react both ways in a world of relatively high interest rates. Yet, the more NFF consider financial assets as substitute for real investment, the more likely the sponsoring a 'rentier-friendly' environment will lead productive investments to stagnate. [ix]

Last but not least, condition (31) defines under which circumstances income distribution might improve, when financial assets (structured and non-structured) guarantee remunerative returns:

$$\frac{d\sigma^*}{dr} < 0 \text{ if } \varepsilon_{u,\chi} > f\left(\overset{+}{\hat{m}}, \overbrace{1-\tau}^{-}\right) \tag{31}$$

With $\varepsilon_{u,\chi}$ as the elasticity of economic activity to increases in rentiers' income. In line with the findings of the previous point, a 'rentier-friendly' world will be hardly associated with an improving income distribution. Indeed, should increases in the relative remunerativeness of financial assets versus productive assets entail a contracting economic activity, i.e. ($\varepsilon_{u,}\chi < 0$), condition (31) will never hold true. During recessions,

rentiers will forge further ahead with respect to wage earners. During expansions, income inequality might theoretically shrink. Nonetheless, ($\varepsilon_{u,\chi} > 0$) is not sufficient for condition (31) to fulfil. Actually, a 'rentier-led expansion-with-decreasing inequality' might only take place if the positive response by economic activity will be strong enough to overcome the right-hand side of condition (31). Interestingly, the right-hand side of equation (31) is a positive function of '*m*', whilst it responds negatively to the wage share $(1-\tau)$. Accordingly, the higher is the degree of financialization of the economy (as grasped by the ratio between house mortgages and the productive capital stock) the harder the possibility that any rise in interest rates on financial assets could lead to a more equitable income distribution. Even further, the economic context characterizing most developed economies since the mid-1970s, i.e. the persistent reduction in the wage shares (as favoured by NFF financialization), makes even more unrealistic the fulfilment of condition (31). These findings seem to recall how a Keynesian-type 'euthanasia of the rentiers' might be highly desirable in order to feed a sustained, and more equitable, economic recovery.

5. Conclusions

This paper contributes to the post-Keynesian analysis of financialization by presenting an 'augmented' post-Keynesian model in which an 'active' shadow banking sector producing structured finance instruments is explicitly formalized.

We show from a macroeconomic point of view how, before the crisis, securitization and shadow banking allowed financial institutions to increase the issuance of mortgages, as well as the profitability of the whole financial sector, while apparently keeping their financial position stable. In this sense, the 1996 reinterpretation of the Glass-Steagall act (eventually repealed in 1999) appears as a turning point (see the corresponding sudden and steep rise of MBS in Figure 1). Even further, interpreting the post-crisis fall in MBS issuances as a signal of the end of shadow banking can be extremely erroneous, probably a pure wishful thinking. Figure 2 shows the stock of four different securitised loans in the US: revolving credit, motor vehicle loans, consumer credit, and student loans. It is easy to see how all the series present astonishing upward trends in the post-crisis period.

[FIGURE 2]

Even worse, our model clearly shows that the securitization process makes legislations on capital requirement not only ineffective, but also potentially

counterproductive. If banks have to accomplish with strict capital ratio requirements, while having access to securitization, they will have a strong incentive to take part in the creation of structured finance products to lighten their balance sheets, hence harming the stability of the economy as a whole. It seems therefore necessary (and urgent) to apply some form of control and limitation to the link between the issuer of the credit and securitizing system. Securitization makes credit easier. Paraphrasing Keynes, 'when the goal of credit issuance is not the financing of productive activities, but the creation of financial commodities, the job is likely to be highly noxious for the economy'. Traditional banks should be dragged out of the shades.

The final part of the paper analyses the effects of shadow banking practices on real economy variables, i.e. economic activity, the accumulation of means of production, and income distribution. In modern financialized economies, any analysis of demand and growth regimes likely turns out as useless if it fails to take into account how shadow-banking related activity can redistribute income from wage earners to rentiers. This paper shows that a highly financialized economy and/or a 'rentier-friendly' regime very likely could give rise to economic stagnation with rising inequality.

This paper only takes into account short-term mechanisms. It could be considered as a first step of a promising venue of research in which shadow banking practices are explicitly integrated into macro models. The natural following step would be to broaden even further the existing contributions by Eatwell *et al.* (2008) and Nikolaidi (2015), in order to explore more in details how the *internal circular dynamics* of contemporaneous financial systems (i.e. the securitization of financial assets and the creation of complex structured financial products as propelled by the extension of repos lending) could affect the medium-to-long run evolution of the real economy in terms of economic growth, income distribution, and the stability of the economy as whole.

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Figures and Tables

Figure 1: *Private depository institutions' total mortgages asset; Private depository institutions' repurchase agreements asset; Total real estate loans owned and securitized by Finance Companies. 1970Q2 =100, for all the series. Source: Board of Governors of the Federal Reserve System (US), Flow of Funds Z1.*

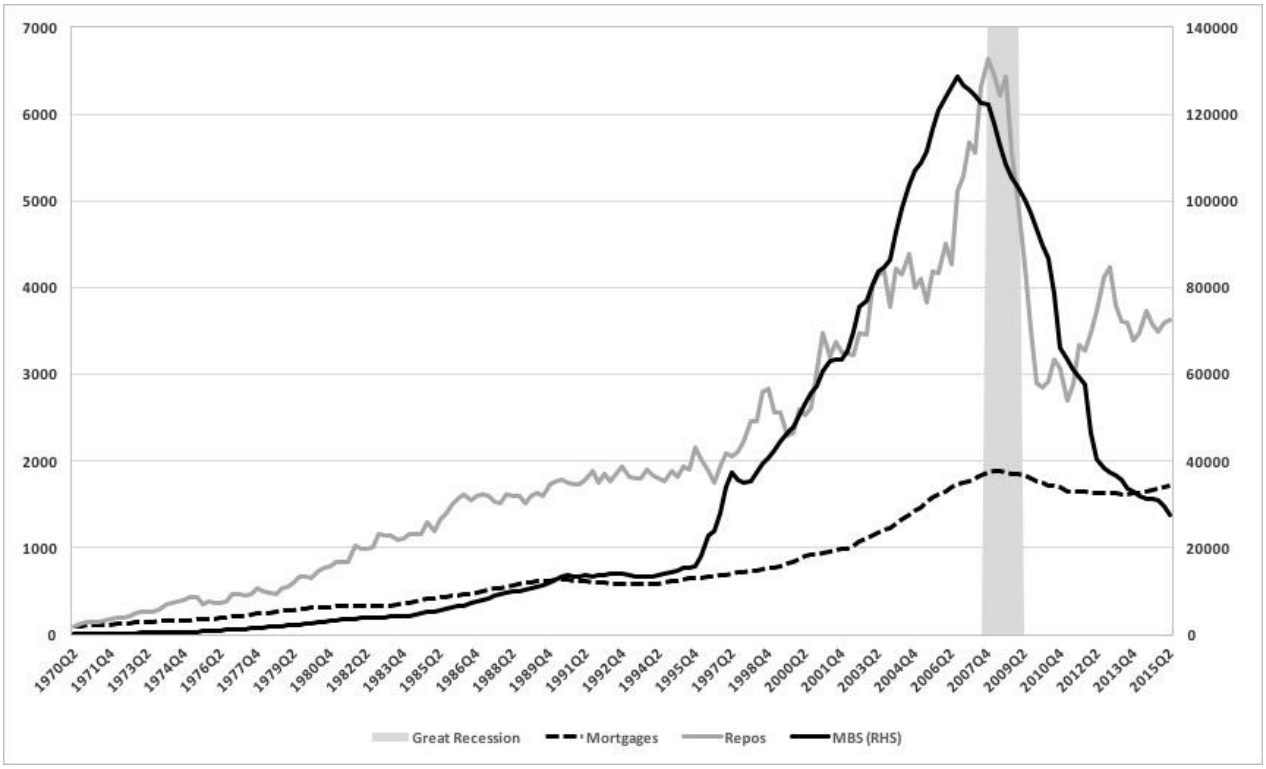

Figure 2: *Securitized assets, 2006Q1 =100. Source: Board of Governors of the Federal Reserve System (US), Flow of Funds Z1.*

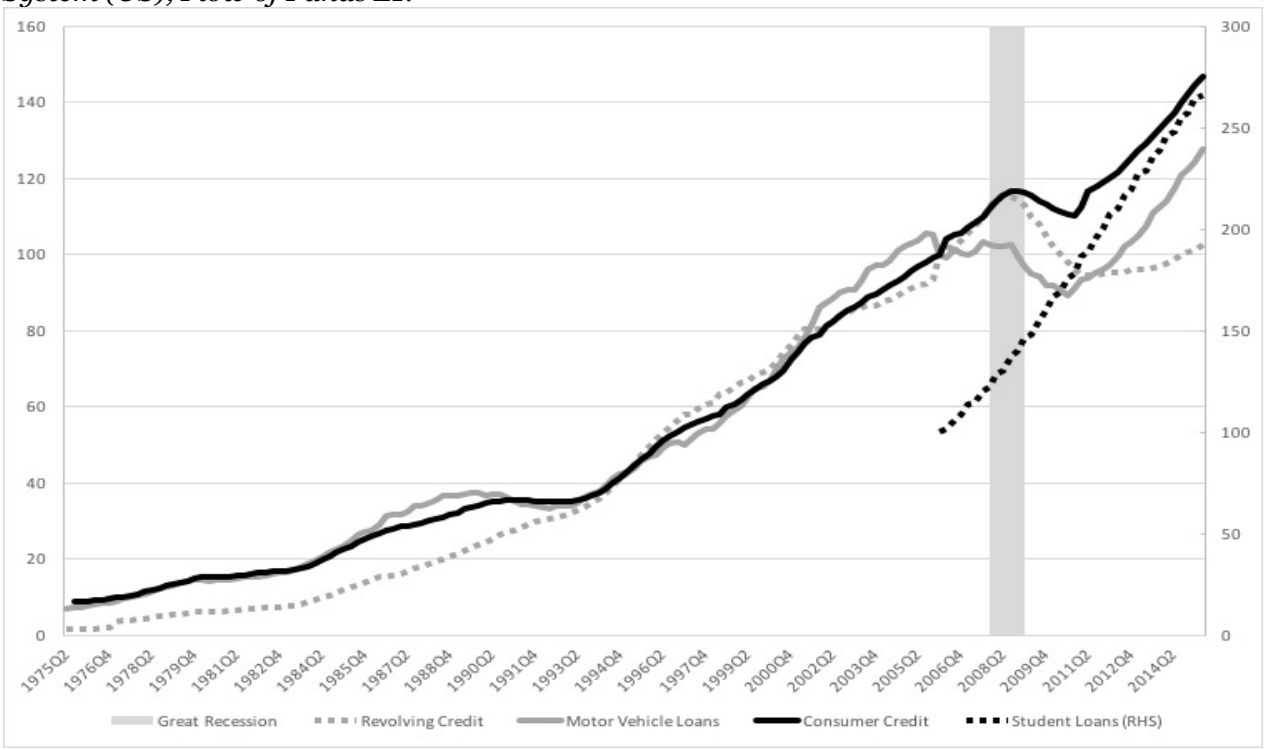

Table 1. *Balance sheet matrix*

	Workers	**Rentiers**	**NF-Firms**	**Commercial Banks**	**Financial Firms**	**Central Bank**	**Σ**
Capital			$+K$				$+K$
Deposits	$+D$			$-D$			0
Houses	$+p_H H$						$+p_H H$
Cash				$+J_{CB}$	$+J_{FF}$	$-J$	0
Mortgages	$-M$			$+(1-z)M$	$+zM$		0
Loans			$-L$	$+L$			0
CDO		$+CDO_R$	$+CDO_{NFF}$		$-CDO$		0
Repos				$+RP$	$-RP$		0
Equities		$+E$		$-E_{CB}$	$-E_{FF}$		0
Net worth	NV_W	NV_R	NV_{NFF}	NV_{CB}	NV_{FF}	NV	$+K+p_H H$

***Table 2**. Full integration matrix*

	Workers		**Rentiers**		**Non-financial firms**		**Commercial Banks**		**Financial Firms**		**Central Bank**	**Σ**
	current	capital	current	capital	current	capital	current	capital	current	capital		
Wages	$+W$				$-W$							0
Consumption	$-C$				$+C$							0
Real Investment					$+I$	$-I$						0
Financial payments:												
Dividends			$+DIV$				$-DIV_{CB}$		$-DIV_{FF}$			0
Mortgages	$-i_M*M$						$+i_M*(1-z)*M$		$+i_M*z*M$			0
CDOs			$+r*CDO_R$		$+r*CDO_{NFF}$				$-r*CDO$			0
CDOs			$-f*CDO_R$		$-f*CDO_{NFF}$				$+f*CDO$			0
Loans					$-i_L*L$		$+i_L*L$					0
Repos							$+i_{RP}*RP$		$-i_{RP}*RP$			0
Σ	$-S_W$	$+S_W$	$-S_R$	$+S_R$	$-P_{NFF}$	$+P_{NFF}$	0	0	0	0	-	0
Change in:												
Deposits		$-\Delta D$						$+\Delta D$				0
Houses		$-\Delta p*H$										-Δp*H
Mortgages		$+\Delta M$						$-(1-z)*\Delta M$		$-z*\Delta M$		0
Loans						$+\Delta L$		$-\Delta L$				0
CDOs				$-\Delta CDO_R$		$-\Delta CDO_{NFF}$				$+\Delta CDO$		0
Repos								$-\Delta RP$		$+\Delta RP$		0
Total	0	0	0	0	0	0	0	0	0	0	-	-ΔP*H
ΔNet Worth	$\Delta NW_W = Sav_W + \Delta pM$ 0		0 0		0 0		0 0		0 0		-	-Δp*H

***Table 3**. Commercial banks leverage under and without securitization*

	Under securitization	Without securitization
lev_{CB}	$\frac{\gamma_1 L + [\gamma_1(1-z) + (1-\vartheta)z]M}{E_{CB}}$	$\frac{\gamma_1(L+M)}{E_{CB}}$

Endnotes

[i] These models usually formalize the distributive consequences of the NFF' increased shareholder value orientation by assuming a higher mark-up rate on variable costs.

[ii] Bhaduri *et al.* (2015) present a short-run macro-aggregated model in which they focus on the consequences of shadow banking-related practices on economic activity only. They do not provide any analysis as to shadow banking implications on income distribution.

[iii] The decision of including two specular flows (*f*CDO* and *r*CDO*) originating from the same asset is motivated by the attempt of making explicit the considerable amount of profits FFs can make out of fees charged on the financial assets they sell to the savers.

[iv] Indeed, financial corporations originally engineered CDO contracts as apparently riskless financial products, guarantying stable prices and relatively high (coupon) interest rates to final investors. This is why, before the crisis, most of them got 'triple A' evaluations from rating agencies, and they were vastly used as collaterals in repo agreements. Accordingly, investments on CDOs were not primarily driven by speculations on possible capital gains and changes in their prices. We think the evolution of their prices (prior to their collapse when the crisis erupted, of course), and of the corresponding effective interest rate, to be minor elements driving final savers' investments on CDOs.

[v] Our representation of repo lending activity is a simplification of a much more complex reality. Indeed, repo lending, i.e. an increasingly important source of finance for FFs involved in shadow banking, traditionally shows relevant intra-sectorial component. The social accounting perspective of the balance sheets shows inter-sectorial net positions, while hiding intra-sector transactions. Despite of this implicit simplification, our model still succeeds in capturing the core of the dynamics we analyse and the fact that the traditional banking sector plays a key role as a net source financing for the financial sector. According to Copeland *et al.* (2012), "clearing banks are not only agents, but also the largest creditors in the tri-party repo market on each business day (Copeland *et al.*, 2012 p.6)".

[vi] Money Market Mutual Funds (MMMF) as well are important creditors for financial institutions involved in securitization. However, for the purpose of this paper, their intermediation activity can be captured in the relation between rentiers and FFs.

[vii] Following Lavoie (2012), a possible solution could consist in allowing *traditional* securitization practices only, according to which assets are not moved out of CBs' balance sheets, but remain in the balance sheet of the originators.

[viii] We ground our first comparative statics exercise on the effect that, in a highly financialized economy, the *past* heightened stream of mortgage creations may have induced on *current* consumption by raising households' wealth and, at the same time, households' indebtedness. Differently from Bhaduri *et al.* (2015), in equation (23) we do not explicitly take into account a positive link between *current* consumption expenditures and *current* capital gains. We do this in order to maintain our model as simple as possible. The inclusion of this further element, although absolutely feasible within our framework, would have complicated the analysis, without adding much to its economic implications.

[ix] A generalized increase in interest rates will usually curtail productive investments by NFF through two main channels. First, external financing from CBs will get more expansive. Secondly, and perhaps more relevantly in a time of financialization, the accumulation of financial assets rather than productive ones will become relatively more remunerative. The only possible way through which NFF financialization could go hand in hand with booming productive investments is by providing NFF with higher cash flows, and hence more 'internal' resources to finance additional productive investments, as accruing by holding highly remunerative structured finance products.